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ABSTRACT

Recent surveys of creativity research have stressed the wide variety of criteria employed by investigators and have pointed out the theoretical and philosophical differences among investigators. Few surveys, however, have questioned whether investigators intended the same, or different, definitions for creativity. Although as many as 26 distinct definitions have been identified, this review of creativity research divides the definitions into two areas--the behavioristic (which identifies creativity with novelty and originality) and the existential (which associates creativity with genius). It is concluded in this review of the literature that the behavioristic-existentialistic dichotomy derived by Stark (1965) is useful when applied to the psychological literature, but it is questionable whether or not Stark's discussion truly reflects all the differences in conceptions of creativity. (RB)

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DEFINITIONS AND CRITERIA OF CREATIVITY: A LITERATURE REVIEW

Dennis Ridley

Recent surveys of creativity research have stressed the wide variety of criteria employed (Smith, 1968) and the theoretical and philosophical differences among investigators (Golann, 1963; Mackler & Shontz, 1965a; Yamamoto, 1965). However, few have questioned whether investigators have intended the same, or different, meanings of "creativity" in their research. Repucci (1960) identified twenty-six definitions of creativity in the literature. Sprecher (1956) is apparently unique in having empirically attacked the question of the degree of agreement among different conceptions of creativity. He applied content analysis to descriptions of the meaning of creativity given by engineering supervisors and psychologists, and found areas of agreement as well as disagreement between the two groups, and relatively high consistency within each group and very high consistency within individuals on his instrument. As Sprecher argues, this approach is one which would allow both consistency and variety to emerge and would eliminate the confusion arising from the many definitions held. It would postpone indefinitely the somewhat premature formulation of ultimate criteria (Ghiselin, 1963). Also, differences among criteria could be somewhat resolved by employing an empirically derived criterion system which would permit determination of the efficiency of the many possible predictors. Unfortunately, this

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approach has not been extended to include the variety of psychologists and educators involved in creativity research. Therefore, it is necessary to examine less reliable suggestions as to the degree of variety and consistency among definitions assumed by different investigators.

Stark (1965) interpreted discussions of creativity as encompassing two distinct and radically different orientations to the meaning of creativity. The first identifies creativity with novelty and originality in behavior; this is the dominant orientation of current scientific psychology. The second attaches a meaning to creativity which is akin to the Romantic conception of genius, i.e., a capacity for creative experience, most often associated with artists and poets and interpreted by contemporaries as eccentricity. Creativity in the first sense focuses on the effects produced by artistic works in the experience of properly prepared and sensitive consumers. Although this dichotomy may be criticized when applied to the creativity literature, it may have some heuristic value in differentiating between the definitions of behavioristically and psychometrically-oriented psychologists on one hand (e.g., Maltzman, 1960; Guilford, 1950; Guilford, 1959) and existentially and clinically-oriented psychologists on the other (e.g., Maslow, 1959b; May, 1959; Rogers, 1959). There is a difficulty in comparing these two groups in that the latter group does not, or cannot, cast its definitions in operational terms. The problem is therefore not only to determine the distinctness and validity of the two approaches by whatever evidence is available, but--assuming that the latter approach is found to have validity in its own right--to suggest new approaches toward measurement which would make more accurate studies of validity possible. Thus, the rest of the paper will assume, heuristically, this dichotomy of meanings of creativity, and will label the first the "behavioristic" emphasis and the second the "existential" emphasis.

THE BEHAVIORISTIC EMPHASIS

As Yamamoto (1965) points out, the common characteristics in most creativity research, as in most American psychology, is that it is positivistic, i.e., objective criteria are employed, whether these be performance measures, personality tests, or ratings by judges. However, some of this research is closely associated with non-positivistic, prgamatic sources such as the influential ideas of Osborn (1957), and therefore is best viewed as a separate emphasis. Other research is characterized by an emphasis on analysis of creativity into elementary factors of behavior by either experimental or factor analytic means. Still a third emphasis is characterized by a holistic approach and the use of personality assessment. These three emphases will be discussed in turn, and the issues which they raise will also be discussed.

Group-ideation research

Most of the research in this group consists of applications of Osborn's (1957) principles of brainstorming. These original formulations were made for practical utilization and tend to be too abstract to be readily translated into empirical terms. Nevertheless, Meadow & Parnes (1959) undertook to conduct research on the effects of teaching brainstorming principles using Osborn's book as a text. Experimental subjects were students enrolled in a course in creative problem solving. A battery of tests was administered to matched experimental and control groups at the beginning and end of the course. These tests included the Unusual Uses and Plot Titles tests from the Guilford originality test battery, and the AC Test of Creativity Ability. The criterion variables were quantity and quality scores which are objectively derived. The results were that the epxerimental group attained superior increments to the control group on two measures of quantity and three measures of quality.

Maltzman (1960) criticized the research of Meadow and Parnes for technical inadequacy. He pointed out that motivational differences between the experimental group and the control group could have caused the differences in scores. He also pointed out the possible contribution of practice effects in the performance of the experimental subjects which was not controlled. Finally, he pointed out that the course was an elective and therefore there is a suspicion that the two groups were not really matched on all relevant variables. These criticisms aside, in view of the fact that the investigators do not present evidence of the validity of their instruments and do not analyze which aspects of their training procedures contributed most to performance, it is extremely difficult to form a judgment of the relevance of this particular research to the remainder of the literature.

In spite of the inadequacies of the brainstorming research, the popularity of brainstorming in industrial and educational settings suggests that the techniques are successful at least for certain kinds of problems. Parnes & Meadow (1959) found that untrained subjects given the brainstorming instruction to express ideas without evaluation produced significantly more good quality ideas than untrained subjects given the instructions to express only good quality ideas. This experiment tested the essential brainstorming principle of deferred judgment on untrained subjects. Thus, Maltzman's objectives regarding the incommensurability of the experimental group and the control group do not apply. At the utmost, it can be concluded that the brainstorming principle of deferred judgment can create conditions favoring the expression of abilities for creative problem solving. Whether these creative abilities can be trained by brainstorming is more questionable. It is evident that proponents of brainstorming are not interested in the crucial problems of finding valid criteria, since they claim to produce attitudes favorable for solution of all types of tasks requiring creative solutions. Apparently, the only contribution of brainstorming

to the criterion problem is to point out certain conditions which are most favorable for measurement of a subject's creative potential, and even this conclusion must be restricted in its generality to the types of tasks on which brainstorming has proved to be effective.

Another group approach which has stimulated research is "synectics." Synectics is a complex method developed by Gordon (1961) and his associates for industrial problem solving. This method claims to tap deeper processes of creative thinking than does brainstorming through the use of several mechanisms for changing perceptual sets and attitudes toward the unknown. Synectics makes the further claim of reproducing in a group setting processes which occur in individual creative thinking. Other investigators (Barron, 1965; Brown, 1965; McPherson, 1964) have found these techniques appropriate for individuals. If the mechanisms initiated by synectics are truly analogous or identical to creative thinking processes leading to inventive breakthroughs, then tests to measure the capacity for using these mechanisms might have high validity at least for technological creativity. However, Gordon's (1961) selection procedures for group participants are not oriented toward objective measurement, and so far no other investigators have attempted this task.

Elementaristic research

Wilson (1951) formulated an objective criterion for creativity research in which he defined originality as the essential component of creativity. In general, this approach has been followed in most of the experimental work. Wilson's specific suggestion was to confine the meaning of originality to statistical infrequency and leave aside considerations of the perceived value of the product, thus facilitating objective measurement. By this criterion, responses are weighted in the inverse ration to their frequency in a given population of responses.

Maltzman (1960) adopted this definition with the additional stipulation that responses should meet the requirement of a given task-situation. Using this definition, Maltzman, Simon, Raskin & Licht (1960) demonstrated that original associations to words and original uses for objects can be induced on paper-and-pencil tests through a simple associative training procedure. Subjects were required to produce written associations to repeated readings of a list of words and to use different associations on each new reading. However, as Gallup (1963) pointed out, Maltzman did not strickly adhere to his stated definition in that merely bizarre associations could have received a high score for originality. Moreover, Maltzman presents no evidence to confirm whether either the tasks or the training procedure is related to creativity as assessed by independent criteria. Maltzman maintains the validity of his approach by a theoretical argument to the effect that original behavior is a form of operant behavior which is reinforced by the word association training procedure. However, Gallup (1963) and

Ridley & Birney (1967) attempted replications and deduced from their findings that the word-association training effect may be explained more simply in terms of induced response sets to be original. This evidence does not call into question the operational definition of originality, but casts serious doubt on the attempt to attach an operant conditioning model to this definition.

Other theorists (Dollard & Miller, 1950; Staats & Staats, 1963) have defined originality as a special form of operant behavior leading to novel and useful responses. Admittedly, they present no evidence in favor of their formulations as does Maltzman. However, Yamamoto (1965) takes exception to these definitions on the grounds that, although they attempt to place originality on a purely objective footing, they all imply a social criterion or normative judgment of individual behavior in comparison with the group behavior in which it appears. Thus, these definitions do not eliminate the dilemma which has plagued creativity research, i.e., that of identifying individual creativity against the social context in which it appears.

Mednick (1962) defined creativity in terms of the associative process of bringing mutually remote associates into contiguity. This definition is operational in that the occurrence of creative solutions to problems is the criterion and the associative process is viewed as the means whereby the probability and rapidity of creative solutions is increased. Mednick developed a test to measure individual differences of the capacity to bring together remote associations to form creative solutions. This test, called the Remote Associates Test (RAT), consists of sets of two or three words, each set having a common associate which the respondent must produce. Mednick & Mednick (1964) stated that the RAT was designed to be a test highly related to creative ability and yet requiring creative performance. The definition employed differs from that of originality in word association tasks in that the required response must be not merely an uncommon associate, but must be the single associate which occurs at the intersection of the associative heirarchies of the test words. M. T. Mednick (1963) reported a correlation of .55 between the rated creativity of psychology graduate students and performance on the RAT. This is perhaps the highest validity coefficient reported for any creativity test in the literature. She also presented evidence to show that the RAT was not related to G.P.A.

Guilford (1950), consistent with his trait approach to personality, advocated the use of factor analytic techniques to identify the specific abilities involved in creative production. He insisted that predictor measures of creativity should represent single factors of creative performance. Following this approach, Guilford (1959; 1962) identified factors which he conceptualized as forming the divergent production domain of his theory of the intellect. The tests developed for measuring these factors call for a variety of responses to figural, semantic and symbolic tasks. Wilson, Guilford & Christensen (1953) developed tests to measure the factor of originality which was thought

to be most relevant to reputations of creativity. These tests defined originality according to three criteria; judged cleverness of responses (Plot Titles), uncommonness of responses (Quick Responses), and remoteness of association (Unusual Uses). In general, tests using the cleverness criterion obtained the highest loading on originality, and tests using the remoteness criterion obtained the lowest loading.

Guilford (1964) defended the factor analytic approach as the most appropriate for dealing with the complexity of individual differences, and also asserted that this approach eliminates the necessity to establish independent criteria of validity since factor analysis provides its own criteria. In contrast, McNemar (1964) took the position that validity should be judged against independent criteria.

In view of Guilford's insistence on identifying single factors of creative performance, it is not surprising that weak indications of validity have been obtained using independent criteria. Using adult subjects Barron (1956) found correlations in the range of .30-.36 between Guilford's measures of originality and interpersonal ratings of originality. Drevdahl (1956) found a correlation of .33 between a score for originality based on Guilford's tests and instructors' rating of originality of students in the fine arts and physical sciences, but no significant differences between groups rated creative and not creative on seven factors of creative thinking. MacKinnon (1961b) stated that in several years of personality assessment of creative, effective people, no significant correlations had been found between scores on the Guilford tests and experts' ratings of creativity. Guilford (1956) argued that low predictive validity from studies such as these are not a fair test of the validity of single-factor tests. Instead, Guilford recommends combining several factor scores, assigning appropriate weights and testing the predictive power of these composite scores. However, no validity studies of this type have been reported. More recently, Guilford (1964) suggested that criteria, such as course grades, as well as predictor variables, should be factor analyzed in order to make possible a more refined study of the predictive validity of particular intellectual factors. Taylor (1964a) undertook this approach with regard to the criteria of performance of research scientists and found that not all of the indices of performance are related to creativity. This factorial complexity suggested to Guilford (1964) that predictive validation studies must be viewed with extreme caution.

Torrance (1962) disagreed with Guilford's position that predictor measures of creativity should represent single factors, arguing that such measures do not accurately reflect the creative process as described by distinguished creators. His approach is to develop complex tasks which are thought to be models of the creative process. Mackler & Shontz (1965a) analyzed this controversy over measurement as being due to the difference between an emphasis on discovering creative people. Mackler & Shontz (1965b) and Mackler & Spotts (1965) presented evidence in favor of Torrance's view. These investigators deduced that, according

to Guilford's approach, there should be high intertask consistency among scores on particular factors of creative performance, whereas, according to Torrance's approach, there should be high consistency among different scores within tests, but not necessarily between tests since creative persons need not be equally creative on all tasks. In accordance with Torrance's view, intertask consistency but not intra-task consistency was found on four tests from Torrance's test battery with male and female undergraduate samples. The investigators conclude that Guilford's attempt to measure specific creativity factors is premature. However, the investigators note that they followed Torrance's guides for scoring these tests. Therefore, it is possible that their findings reflect considerable differences in scoring practices between Torrance and Guilford and thus do not constitute a conclusive refutation of Guilford's approach. Moreover, Mackler & Shontz (1967) reported similar data which was somewhat more favorable to the factor analytic approach.

Another line of objection to the factor analytic approach is that the tests which are claimed to be most relevant to creative performance are verbal in nature. Dentler & Mackler (1964) found a highly positive correlation between several measures of verbal originality and College Entrance Examination Board verbal scores. These investigators also reported low correlations among their tests. Thorndike (1963) speculated that even the low degree of correlation among the divergent abilities tests may be due primarily to the factor of g, thus casting doubt on whether there is enough commonality among these tests to justify using the word "creativity" to apply to all of them. Thorndike pointed out that the use of a single term to cover such diverse tests is confusing, in view of the fact that correlations among these tests are even lower than correlations among different intelligence tests. However, these objections do not refute the position of Guilford, who is not guilty of applying the term "creativity" indiscriminately to his tests, but who rather argues that any specific real-life task involves various combinations of abilities which the tests attempt to identify.

The kernel of the controversy over the factor analytic approach seems to be whether the combination of scores on isolated factors does in fact accurately predict performance on an actual creative task. Crutchfield (1961) pointed out that there has been no proof of this fundamental assumption, and moreover the relevance of the factors to performance is determined in part beforehand by the investigator's choice of tests. Stein (1962) pointed out that the "objectivity" of psychometric criteria is deceptive because the definitions employed may be appropriate to the laboratory situation but there is no assurance that the "creative" individual under these circumstances will obtain a reputation for creativity in society. MacKinnon (1967) suggested that these tests do indeed tap the processes of creative thought but fail to measure the extent to which a person will apply those processes to a real-life situation and will have the motivation to sustain this creative activity.

Other investigators have suggested creativity tests having a much more direct relationship to real-life creative performance. Flanagan (1963) suggested a test based on an analysis of critical incidents leading to ingenius solutions to practical problems. This test, called the Ingenuity Test presents a series of predicaments to which there exists a unique and ingenius solution for each. Flanagan's definition of ingenuity closely corresponds to the qualities required of a patentable invention. Although no validation studies are reported, this approach appears to have promise because it has direct bearing on real-life situations and yet is not a completely unanalytical applied approach. However, Flanagan's aim of measuring a single trait of ingenuity may be unrealizable in view of the vast range of possible performance to be predicted.

McPherson (1963) proposed to assess creative abilities by directly measuring the creative qualities of the product. This approach, like Flanagan's, patterns its conception of creativity after the standards applied to determine whether an invention is patentable. McPherson suggested that an application of these standards to work products would constitute an ultimate criterion of creative capacity for the particular kind of work assessed. It is difficult to dispute the validity of this approach. However, finding a suitable measurement would be difficult in practice because of the possible correlation between quantity and quality. Unfortunately, McPherson apparently did not follow up on his suggestion.

The work of Torrance (1962) is more closely associated with the personality assessment research than the foregoing research, and yet his emphasis is primarily on the identification of creative abilities by paper-and-pencil tests. As mentioned above, these tests are designed to be models of the creative process. Thus, unlike single-factor tests, they are amenable to straightforward predictive validation study. In some cases Torrance compared independent ratings of high and low-scoring subjects on his tests, and in other cases he compared scores against criterion groups of subjects rated high and low on creativity. By the first approach, Torrance (1964) found that elementary school children who scored highly also produced more ideas in small-group problem solving sessions. The most creative children were also found to have reputations among peers for having wild and fantastic ideas. Torrance (1964) also found that high-scoring business teachers perform very differently in a classroom situation then low-scoring peers. differences included a greater variety of illustrations and greater interaction with students. Torrance did not make the additional step of arguing that these characteristics are worthy of the designation "creative." Instead, he begged the question by continually referring to high-scoring subjects as "creative" subjects.

Using the second approach of identifying criterion groups, Torrance (1964) found that children nominated by teachers as most creative and inquisitive received higher scores than did peers with average or low

ratings. Similar findings resulted for children above the third grade when peer nominations were used as the criterion. Torrance (1964) reported that the best validity evidence at the high school level resulted from peer nominations based on the same criteria as used in scoring the tests, i.e., scales of ideational fluency, flexibility and originality.

This latter procedure suggests that the criteria of validity were contaminated by preconceptions as to what constitutes creativity, which in turn casts suspicion on the previous validity information. The most objective aspect of these studies suggests that scores on these creative thinking tests can discriminate the most productive subjects from the least productive subjects at various age levels. This is supported by Wallace (1961), who found that highly productive saleswomen in a large department store scored significantly higher than less productive peers. These data raise the further question of the extent to which quality scores were an artifact of increasing levels of productivity. Although Torrance (1964) expressed concern for prior differences among subjects in verbal productivity, there are indications that his tests do not take this factor sufficiently into account. Ridley (1968) obtained evidence from fifth-grade subjects which suggests that the Torrance variables of flexibility and originality are strongly influenced by the set to be productive. These data confirm the suspicion that Torrance's definition of creativity favors the productive subject. The fact that these tests were constructed in the light of research on the creative process does not help, because the latter research, in turn, may have been founded on unwarranted preconceptions of creativity. At some point, attempts to measure creativity must be tested against manifest and unarguable criteria of creative performance in society.

A number of investigators have attempted to develop non-aptitudinal predictors of creative performance. McDermid (1965) compared the evaluations of engineers by their supervisors and peers with biographical information and self-descriptions as well as personality tests. He found that the creativity rating of the Biographical Information for Research and Scientific Talent (BIRST) and several scales of the Adjective Check List correlated well with a combined supervisor-peer rating of creative performance, whereas the personality tests did not predict well to this criterion. The BIRST rating correlated .43 with the criterion, which is one of the highest validity coefficients in the literature. Holland (1961) used lists of achievement assumed to be creative in nature as criteria to predict future scientific and artistic achievement of talented adolescents. Longitudinal study proved that the criteria had some success in predicting future success. Taylor (1964) reviewed studies of this type and found validity coefficients in the range of .30-.55. Holland (1964) reported that in several years of follow-up studies, lists of similar past achievements proved to be the most efficient predictors of achievement, followed by self and teacher ratings.

These data provide solid evidence that measures of abilities alone are inadequate criteria of creativity and need to be supplemented by non-aptitudinal measures in order to predict future reputations of creativity. However, this evidence does little to shed light on the complexity of the criterion problem which will probably necessitate different types of predictors for different types of future performance. Also, these criteria do not provide guidelines for detailed research concerning the factors which produce the eventual reputations of creativity. It is necessary to turn to personality assessment research in order to find criteria of this type.

Personality assessment approach

The personality assessment approach is characterized by a more holistic emphasis upon the complexity of the personality and its interrelationships with the social milieu. MacKinnon (1961a) gives a representative definition of creativity as referring to behavior which is not only original and adaptive to reality but which occurs in conjunction with evaluation of the original insight and sustaining and developing it through all of its ramifications. This formulation attempts to bridge the gap between laboratory testing situations and real-life contexts.

Getzels & Jackson (1962) attempted to identify creative persons within the context of their school and family milieu. This study has been criticized on a variety of methodological grounds (c.f. DeMille & Merrifield, 1962). For the purposes of examining criteria of creativity, the most relevant criticism is that these investigators used criteria derived from a trait approach in order to set up contrasting types of children, i.e., the highly creative (but not so highly intelligent) and the highly intelligent (but not so highly creative). (The first group was defined as those subjects among the top 20% on several tests of divergent production but below the top 20% on I.Q. measures, while the second group was defined as those subjects among the top 20% on the I.Q. measures but below the top 20% on the divergent production measures.) That this distinction may be arbitrary and unreal is suggested by the typical nature of the school population and the omission of a considerable number of high-high's, among other reasons; but the use of tests derived from the laboratory situation in order to define contrasting styles of social and cognitive performance seems to be a needlessly confusing approach to the criterion problem. Getzels & Jackson obtained some suggestive findings which, in general, supported the critique of the exclusive use of I.Q. tests made by Guilford (1950) at the outset of his investigations. Although it can be concluded that the two types of tests identify distinguishable groups of people, there is no more justification for designating one group as "creative" than there is for accepting the psychometric definition of creativity. At best, there are suggestions here of possible social determinants of creative-like behavior, but these suggestions need more support than this one

study, and more importantly, Getzels & Jackson make no contribution toward developing criteria which will allow the complexities of creativity to be studied analytically.

MacKinnon (1961b) and Barron (1963) have presented the approach and findings of an influential group of investigators at the Institute of Personality Assessment and Research. In general, two approaches have been followed in this research. The first approach used unselected subjects and evaluated the personality characteristics of high and low scorers on a number of tests of originality. The second approach studied the personality characteristics of highly creative subjects in several fields as chosen by experts in those fields.

Following the first approach, these investigators evaluated 100 Air Force captains by a 3-day living-in assessment procedure (Barron, 1956). The definition of originality employed was similar to that employed by the factor analysts, i.e., statistically uncommon behavior which is adaptive to given task-situations. Eight tests, including Guilford's originality test battery, were administered. A composite score on originality was found to correlate .55 with staff ratings on the originality of the subjects. On the basis of this finding and generally positive and significant correlations among the tests, Barron (1956) proposed that originality is a personality dimension and that the tests had tapped this dimension. Original and unoriginal subjects were then defined as the 30 extreme scorers on the basis of all of the tests. Hypotheses concerning the characteristics of original persons, derived from previous research, were then tested using personality tests and staff ratings. The confirmation of most of these hypotheses constituted evidence of internal consistency of the concept of originality as defined here. However, the fact that unselected subjects were used suggests that the concept of originality (or creativity) may be unduly restricted in scope. It is possible that creativity of a high order may be associated with different, although similar, processes and characteristics. MacKinnon's (1961b) statement that the Guilford tests have shown essentially zero correlation with creativity as defined by experts in various fields lends support to this argument. Therefore, these findings, like those of Torrance, may be regarded as at least partially determined by the a priori definition of originality employed in the testing situation. It is still necessary to establish direct relationships between processes tapped by creativity tests and manifestly creative performance in society.

The studies based on experts' choices of highly creative persons included samples of architects, writers, artists, mathematicians, and research scientists. Since these studies used essentially the same types of criteria, it is sufficient to examine only the best of them, i.e., the study of architects. MacKinnon (1961c) asked five professors of architecture to nominate and rank the 40 most creative architects in the country; 86 names were produced and architects were invited, the most frequently nominated first, until 40 agreed to participate. These

40 were found to be no more creative according to the experts' rankings than the 24 who declined to participate. Furthermore, no differences were found between these two groups according to 11 editors of architectural journals who independendently ranked all 64. That the criterion of creativity was highly accurate was further indicated by a high correlation (.88) between architects' self-rankings and the averaged rankings of the experts. Two comparison groups, equated with the first in terms of age and geographical location, were selected on the basis of criteria for being representative or moderately distinguished. The total list of participants, numbering 124, were then ranked once more by 19 professors of architecture in addition to the original professors and editors. The resulting averaged rankings were found to differentiate among the three groups at a high level of significance. Since the majority of the most creative architects in the country participated, the criteria probably accurately reflected the meaning of creativity in architecture.

When all of these studies are reviewed it is difficult to determine the extent to which findings may be generalized beyond the specific field studied. For example, MacKinnon's (1961c) finding that creative architects are more intuitive than less creative architects on the Myers-Briggs Type Indicator may well be peculiar to the field or architecture, since all three groups were found to be intuitive. Barron (1964) reported some similarities among the personality profiles of creative writers and creative architects on the MMPI and Myers-Briggs Type Indicator. Staff descriptions of individuals varied from group to group. It is still uncertain whether any one instrument can be used to accurately predict reputations for creativity in several fields. However, Barron (1953; 1963) has made the forceful claim that a bi-polar dimension of complexity versus simplicity can distinguish between creative and less creative subjects. The instrument used was the Barron-Welsh Art Scale (Barron & Welsh, 1952) which measures the degree of preference for complex-asymmetrical over simple-symmetrical drawings. This scale was successful in discriminating between the creative and less creative architects, research scientists, male mathematicians, artists and writers. While this evidence represents a significant step toward measurement of manifest creativity, it is necessary to suspend judgment as to whether the processes inferred from this test are the secret of creativity of the genius variety. A still better test would be one which not only predicts to criterion group categories, but also correlates well with the rankings of individuals within those categories. However, it may turn out that such a goal is unrealizable because genius in different fields is essentially dissimilar. So far, positions on this question are unsupported by evidence in the behavioristic realm.

THE EXISTENTIAL EMPHASIS

The points of view expressed in this realm are more difficult to evaluate than those in the behavioristic realm because, for the most

part, they lack the self-corrective aspect of empirical research. Nevertheless, it is difficult to ignore the common thrust of these points of view. A representative statement has been made by Anderson (1965). He stressed the fact that creativity occurs in the moment of now, in the person whose openness to present experience is not distorted by the taboos or expectations of others. Anderson stated that even though past experience and preparation are necessary for a creative act, the act can only occur in the open and truthful encounter with the environment.

Despite differences of theoretical frameworks, this theme runs through the statements of May (1959), Schactel (1959), Maslow (1959a; 1959b), Rogers (1959) and others. More than developmental differences between creative and less creative persons, they stress differences in perceptual and cognitive styles. May (1959) and Schactel (1959) criticized reductionistic analysis of the artist and stressed the genuineness of the perceptual encounter with the world. Maslow (1959a; 1959b) and Rogers (1959) made similar points but placed more emphasis on the interpersonal influences which distort awareness of the environment.

It would help to clarify this orientation if theoretical analyses were made linking these processes to well-studied variables of social and therapeutic interaction. Tumin (1962) attempted this from a sociological perspective, while Beier (1956) made a relevant statement from a clinical perspective. Gallagher (1964) noted a convergence of theoretical constructs of Maslow, Schactel and Getzels & Jackson (1962) which could be organized in terms of developmental processes. Mackler & Shontz (1964) organized the concepts of Schactel (1959) and Murphy (1947), among others, in terms of "sensory life styles."

A basic assumption of many within this orientation is that genius of a high degree is essentially similar. Most of the presumed evidence for this assumption is either anecdotal (Ghiselin, 1952) or by analogy with other biological functions (Murphy, 1947). However, even if the essential components of creative genius are inherited and highly equivalent across individuals and fields of endeavor, the tasks of determining the factors involved in its full development and of identifying the potential for genius at an early age remain to be solved. In general, the outstanding spokesmen are weak in these areas. However, if they are to maintain the equivalence of genius with the capacity and motivation for openness to experience, they have the burden of proof. At the present time it could just as well be argued that creative genius is not equivalent to these characteristics and that different names should be used to describe the two. In fact, Maslow (1959b) does not equate what he calls "special talent creativeness" with "creativeness," which in his scheme is related to psychological well-being. In the absence of evidence to the contrary, more distinctions in the use of the word "creative" are necessary.

CONCLUSION

The remaining task of this paper is to assess whether Stark's (1965) interpretation of discussions of creativity is useful when applied to the psychological literature, and to suggest steps toward clarifying the criterion problem.

Stark's distinction was useful in bringing to light a basic philosophical difference between empiricists and existentialists. While the empirical research is extremely varied, it is readily distinguishable from the more existential statements in that definite criteria are essential to research. Apparently, most members of the latter group assume that anyone can understand their terms by consulting his own experience. Unfortunately, perhaps, for the empiricists, this is not always true. Therefore, criteria will be required before any real agreement can be reached.

In general, the two groups agree that a few rare geniuses are worthy of the designation "creative" and that it would be desirable to have instruments which could identify similar individuals before they reach maturity. The empiricists have, for the most part, recognized that such identification on the basis of products alone suffers from the fact that the most creative products are often not identifiable as such by comtemporaries (Zimmerman, 1964). Therefore, if the claim of the similarity of creative genius is accepted as a hypothesis, the empiricists should be ready to try other instruments which are related to processes discussed within the existentialist orientation. These psychologists should be prepared to admit the possibility that creativity as presently defined in research is as culture-bound as the concept of intelligence (Joncich, 1964).

Stark (1965) suggested that the Human Movement Response (M) of the Rorschach Ink-Blot Test is a measure of the capacity for "inner creation" which he opposed to the more technological, action-oriented conception of creativity characteristic of the empirical approaches. Schactel (1966) argued that M is a valid measure of the capacity for "creative experience" but not necessarily of creative production. If M is indeed a fair measure of creativity as conceived by the existentialists, it need not be validated against criteria set up by the empiricists, since their conceptions of creativity are probably different. Thus, the evidence of Griffin (1958) and others, that the M response is not related to reputations of creativity of low distinction, does not invalidate this measure. In the absence of a sufficient number of geniuses for concurrent validation, it is conceivable that this measure or similar measures could be used in long-range predictive studies.

Whether Stark's discussion truly reflects all of the differences in conceptions of creativity is more questionable. This question could be attacked empirically by more research like that of Sprecher (1956). Such an approach could conceivably begin to sort out in the minds of psychologists the real criterion problems from those which are merely verbal in origin.

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